Applicant respectfully disagrees. "Carbon groups" is considered an appropriate term. The inorganic and carbon-containing groups may be present on a single compound, such as a resin. See page 3, lines 26-27 of the application and the above discussion.

At page 3, lines 3-8 of the Office Action, the following is stated:

> The recited "... mole percent ... based on total solids ..." (page 6, lines 2, 13) appears to be indefinite, because the instant specification does not provide for the calculation of mole percentage."

Applicant also respectfully disagrees with this statement. Calculation of mole percentage is extremely well-known by persons skilled in the art. See, for instance, U.S. Patent 5,340,696 (copy enclosed), which recites mole percentages in the claims. Molar content of a composition of multiple components can be readily determined. Indeed, see the claims of U.S. Patent 5,645,970 (copy enclosed), where molar percentages of components of a composition are recited.

In view thereof, reconsideration and withdrawal of the objection is requested.

Claims 2, 3, 13, 18 and 19 were rejected under 35 U.S.C. 112, second paragraph. The rejection is traversed.

Regarding the comments regarding "mole percent" as recited in the claims, Applicant repeats and incorporates by reference the above comments. Persons skilled in the art can readily determine mole percents of a composition. Such an approach has been employed in other issued U.S. patents, thereby indicating that the present claim language fully satisfies the requirements of Section 112.

The Office Action also states that claims 13, 18 and 19 are indefinite by the recitation of reactivity of the antireflective hard mask layer and dielectric layer.

Applicant believes the claims are abundantly clear on their face, particularly when read in light of the supporting specification, as is proper. Additionally, claims 13, 18 and 19 have been amended to add further clarity.

In view thereof, withdrawal of the rejection is respectfully requested.

Before addressing the several rejections under Section 102 and 103, a brief discussion of Applicant's invention may be helpful.

Applicant's invention includes antireflective compositions that can function as hard masks, i.e. the antireflective compositions have etch rates that are distinct from an overcoated resist layer and a below dielectric layer. See page 4 of the application. Such selective etch rates can greatly facilitate processing of the integrated circuit substrate.

To provide such a selective etch rate, Applicant incorporates inorganic material into an organic antireflective component.

The antireflective compositions of the present application preferably contain a significant amount of inorganic material, such as at least about 3 or 5 mole percent based on total solids of the composition, or even greater amounts such as 7, 10, 12, 15, 17, 20, 25, 30, 35, or 40 mole percent based on total solids of the composition. See page 6 of the application.

The inorganic material may be incorporated into the antireflective composition in a variety of ways. For instance, a preferred method is to employ a resin that has inorganic groups, such as silicon groups. That resin also may contain chromophore units that absorb undesired reflections of exposure radiation. See, for instance, pages 3 and 7-9 of the application

Si is a preferred inorganic material of the antireflective composition of the present application.

Claims 1-11 and 15-17 were rejected under 35 U.S.C. 102(e) over Pavelchek et al. (U.S. Patent 5,939,236).

Claims 13, 18 and 19 were rejected under 35 U.S.C. 102(e) or, in the alternative under 35 U.S.C. 103 over Pavelchek et al. (U.S. Patent 5,939236).

Claims 12 and 20 were rejected under 35 U.S.C. 103 over Pavelchek et al. (U.S. Patent 5,939236).

For the sake of brevity, the three rejections are addressed in combination. Such a combined response is considered appropriate because, *inter alia*, each of the rejections relies on the Pavelchek et al. patent as the sole citation. Each of the rejection is traversed.

The cited Pavelchek document is relied upon for the disclosure of an antireflective composition that contains a photoacid generating compound (PAG) which contains inorganic elements. The cited Pavelchek patent has common inventorship and ownership with the present application.

However, that PAG component is present in relatively **very small amounts**. See, for instance, the examples of U.S. Patent 5,939,236.

The cited Pavelchek document does not disclose use of a photoacid generating compound in the amounts recited in claim 1. Indeed, the cited Pavelchek document does not disclose an organic hard mask antireflective composition that exhibits significant etch rate differentials relative to a below dielectric layer.

Nor does the cited Pavelchek document disclose a resin that inorganic elements, including a resin that has both inorganic elements and chromophore units, as generally recited in Applicant's claims 24-29.

In view thereof, reconsideration and withdrawal of the rejections are requested. See *In re Marshall*, 198 USPQ 344, 346 (CCPA 1978) ("[r]ejections under 35 U.S.C. 102 are proper only when the claimed subject matter is identically disclosed or described in the prior art."). See also Section 2143.03 of the Manual of Patent Examining Procedure ("To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.").

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

Respectfully submitted,

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VERSION TO SHOW MARKED CHANGES

1. (amended) A method for etching a dielectric layer overlying an integrated circuit or electronic packaging substrate, comprising:

(a) providing an integrated circuit substrate having a dielectric layer thereon;

(b) over the dielectric layer, depositing a coating layer of an inorganic antireflective hard mask composition that comprises one or more inorganic elements selected from Group IIIa, IVa, Va, VIIA, VIII, Ib, IIb, IIIb, IVb, or Vb of the Periodic Table, the antireflective composition comprising at least about 5 mole percent of inorganic atoms, based on total solids of the antireflective composition;

(c) depositing a coating layer of a photoresist composition over the antireflective hard mask composition coating layer;

(d) exposing to patterned radiation and developingthe photoresist composition coating layer to form [to form] a photoresist relief image over the antireflective hard mask composition;

(e) etching the antireflective hard mask composition to form a relief image thereof; and

(f) etching bard dielectric layer areas.

13. (amended) The method of claim 1 wherein the antireflective hard mask layer is at least about three times less reactive [to an oxygen plasma etch] than the dielectric layer to the same oxygen plasma oxygen applied to the antireflective composition and the hard mask composition under the same conditions.

18. (amended) A method for etching a dielectric layer overlying an integrated circuit or electronic packaging substrate, comprising:

(a) providing an integrated circuit substrate having a dielectric layer thereon;

(b) over the dielectric layer, depositing a coating layer of an organic antireflective hard mask composition that is at least three times less reactive [to an oxygen plasma etch] than the dielectric layer to the same oxygen plasma oxygen applied to the antireflective composition and the hard mask composition under the same conditions;

(c) depositing a coating layer of a photoresist composition over the antireflective hard mask composition coating layer;

(d) exposing to patterned radiation and developingthe photoresist composition coating layer to form [to form] a photoresist relief image over the antireflective hard mask composition;

(e) etching the antireflective hard mask composition to form a relief image thereof; and

(f) etching bard dielectric layer areas.

19. (amended) The method of claim 18 wherein the antireflective hard mask composition is at least about 5 times less reactive [to an oxygen plasma] than the dielectric composition layer to the same oxygen plasma oxygen applied to the antireflective composition and the hard mask composition under the same conditions.